

Alton Coal Development, LLC

463 North 100 West, Suite 1

Cedar City, Utah 84720

Phone (435) 867-5331 • Fax (435) 867-1192

Incoming
C0250005
#4000
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Date: January 20, 2012

Daron R. Haddock
Coal Program Manager
Oil, Gas & Mining
1594 West North Temple, Suite 1210
Salt Lake City, UT 84114-5801

RECEIVED

JAN 23 2012

DIV. OF OIL, GAS & MINING

Subject: Mine and Reclamation Plan Addendum – Addendum to Appendix 3-5.

Dear Mr. Haddock,

Enclosed are C1/C2 forms and 4 clean copies of the Addendum to Appendix 3-5 titled "Greater Sage-grouse Population and Habitat Improvements, Progress Report for Alton Coal Development, LLC January 16, 2012". This replaces "Greater Sage-Grouse Monitoring and Habitat Use in South-Central (Alton) Utah".

Please let me know if you have any questions or concerns. I can be contacted at (435) 691-1551

Sincerely,

B. Kirk Nicholes
Resident Agent

APPLICATION FOR COAL PERMIT PROCESSING

Permit Change ☒ New Permit ☐ Renewal ☐ Exploration ☐ Bond Release ☐ Transfer ☐

Permittee: Alton Coal Development, LLC

Mine: Coal Hollow

Permit Number: C/025/0005

Title: Greater Sage-grouse Populations and Habitat Improvements, Progress Report

Description, Include reason for application and timing required to implement:

The submittal is a update of the addendum to appendix 3-5

Instructions: If you answer yes to any of the first eight (gray) questions, this application may require Public Notice publication.

- ☐ Yes ☒ No 1. Change in the size of the Permit Area? Acres: _____ Disturbed Area: _____ ☐ increase ☐ decrease.
- ☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order? DO# _____
- ☐ Yes ☒ No 3. Does the application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- ☐ Yes ☒ No 4. Does the application include operations in hydrologic basins other than as currently approved?
- ☐ Yes ☒ No 5. Does the application result from cancellation, reduction or increase of insurance or reclamation bond?
- ☐ Yes ☒ No 6. Does the application require or include public notice publication?
- ☐ Yes ☒ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- ☐ Yes ☒ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- ☐ Yes ☒ No 9. Is the application submitted as a result of a Violation? NOV # _____
- ☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies?
Explain: _____
- ☐ Yes ☒ No 11. Does the application affect the surface landowner or change the post mining land use?
- ☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing? (Modification of R2P2)
- ☐ Yes ☒ No 13. Does the application require or include collection and reporting of any baseline information?
- ☒ Yes ☐ No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- ☐ Yes ☒ No 15. Does the application require or include soil removal, storage or placement?
- ☐ Yes ☒ No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- ☐ Yes ☒ No 17. Does the application require or include construction, modification, or removal of surface facilities?
- ☐ Yes ☒ No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- ☐ Yes ☒ No 19. Does the application require or include certified designs, maps or calculation?
- ☐ Yes ☒ No 20. Does the application require or include subsidence control or monitoring?
- ☐ Yes ☒ No 21. Have reclamation costs for bonding been provided?
- ☐ Yes ☒ No 22. Does the application involve a perennial stream, a stream buffer zone or discharges to a stream?
- ☐ Yes ☒ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

Please attach four (4) review copies of the application. If the mine is on or adjacent to Forest Service land please submit five (5) copies, thank you. (These numbers include a copy for the Price Field Office)

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein.

B. Kirk Nicholas
Print Name

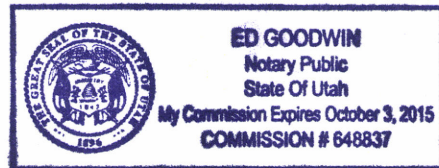
B. Kirk Nicholas, Environmental Specialist
Sign Name, Position, Date 1/20/12

Subscribed and sworn to before me this 20 day of January, 2012

Ed Goodwin
Notary Public

My commission Expires:

Attest: State of Utah 10-3, 2015 } ss:
County of Iron



For Office Use Only:

Assigned Tracking
Number:

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DIV. OF OIL, GAS & MINING

APPLICATION FOR COAL PERMIT PROCESSING

Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: Alton Coal Development, LLC

Mine: Coal Hollow

Permit Number: C/025/0005

Title: Greater Sage-grouse Populations and Habitat Improvements, Progress Report

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED

☐ Add ☐ Replace ☒ Remove

Greater Sage-grouse Monitoring and Habitat Use in South-Central (Alton) Utah; removed from Volume 2, Appendix 3-5 Alton Sage-Grouse Habitat Mitigation Plan as an addendum

☒ Add ☐ Replace ☐ Remove

Greater Sage-grouse Population and Habitat Habitat Improvements; added to Volume 2, Appendix 3-5 Alton Sage-Grouse Habitat Mitigation Plan as an addendum

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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

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Greater Sage-grouse Population and Habitat Improvements

Progress Report

For

Alton Coal Development, LLC

January 16, 2012

**Steven L. Petersen, Ph.D.
Sage-grouse Population and Habitat Consultant**

Alton Coal Greater Sage-grouse Habitat Improvement Progress Report

Steven L. Petersen, Ph.D., Consultant

YEAR 2011

The objective of this report is to present the work that was completed in 2011, which has been to protect current sagebrush habitats and to create improved conditions for greater sage-grouse conservation in the Alton Region. It is Alton Coals ongoing objective to meet the states of Utah (Utah Department of Oil Gas and Mines, Utah Department of Wildlife Resources) expectations for sage-grouse management and to achieve and exceed the Bureau of Land Management standards described in Memorandum No. 2012-043. This includes short-term treatment implementation and monitoring activities and long-term habitat improvement goals.

As presented in this report, the work completed in 2011 includes 1) identifying and improving connectivity between Alton and Hoyts Ranch, 2) removing predators that take adult and juvenile birds, 3) enhancing and diversifying intact sagebrush ecosystems found in the Alton region, and 4) participating with CCARM in establishing goals and priorities for the conservation of sage-grouse in the Alton area. This document also proposes goals and workplans recommended for 2012 season. These plans will be presented to UDOGM, UDWR, and CCARM for review and feedback. The final plan will be submitted to UDOGM and implemented based on approval.

Identifying and improving connectivity between Alton and Hoyts Ranch

Corridor Qualification and Description

In 2010, greater sage-grouse (*Centrocercus urophasianus*) were trapped and collared at the Hoyts Ranch lek. Of the birds that were collared, six migrated south toward Alton beginning in early spring and arriving in the Alton and Sink Valley area as early as mid summer. Birds remained in this area throughout the fall and winter months (Appendix A, figure 3) and then likely returned to the Hoyts Ranch lek or the Sage Hen Hollow Lek for the 2011 breeding season. Monitoring of collared birds continued through January 2011 just prior to the breeding period. Collaring, monitoring, and data collection were funded by ACD. This monitoring effort was funded by ACD and managed by Dr. Nicki Frey, a wildlife biologist from Utah State University Extension that is based out the Southern Utah University office located in Cedar City Utah. Dr. Frey maintains and stores all sage-grouse collared data collected between 2006-2011.

According to Dr. Frey, all birds collared and monitored in 2009 were observed between Hoyts Ranch and Sink Valley, located in the southern end of the Alton area. She recorded the maximum straight-line distance each collared bird traveled during the year. On average, birds traveled 24.9 km between both areas, suggesting that bird migration for birds generally extended between Hoyts Ranch and the Sink Valley area. Distances traveled by individual birds are provided in table 1.

Table 1. Distances traveled by birds between Hoyts Ranch and Alton (Sink Valley). Data were provided by Nicki Frey, wildlife biologist and sage-grouse specialist from Utah State University. The distance between Hoyts Ranch and Alton is approximately 20km.

| Bird ID | Distance Traveled (km) |
|----------|------------------------|
| 151.8098 | 10.2 |
| 151.7969 | 22.3 |
| 151.1779 | 21.4 |
| 151.7381 | 22.9 |
| 151.6600 | 22.9 |
| 151.1346 | 19.7 |
| 151.3098 | 23.8 |
| Overall | 24.9 |

Habitat connectivity and Improvements

In regards to Special Permit Condition #6 and Appendix 3-5 related to the creation of a corridor between Hoyt's Ranch and South Alton sage grouse leks.

Recorded observations from 2009 to 2010 (Table 1, Appendix A – Figure 3) indicate that birds migrate from Hoyts Ranch to the Alton area, primarily during summer and fall months. In 2011, birds were observed by Alton Coal Development (ACD) and local residents from the Alton area on multiple occasions and throughout the Alton and Sink Valley areas (Table 2). These data suggest that the corridor has continued to serve as an important migration pathway for sage-grouse that utilize these two important habitat areas.

Long term objectives of this work have been to contribute to overall habitat improvement and connectivity between these two important areas. This work will facilitate long-term annual migration of sage-grouse between Hoyts Ranch and Alton that enables the birds to continue to use the Alton area for foraging and raising juvenile birds. It also emphasizes the need to reduce tall tree structures that act as potential perching sites for hunting hawks and eagles and

maintains cover structure that encourages use and limits vulnerability to predators (Gregg 1991).

Table 2. Observations of sage-grouse recorded in 2011 within the Alton region. Most observations were made by employees of Alton Coal Development (ACD) or local residents of Alton, Utah.

| Date | Time of observation | Number of birds | Location |
|------------|---------------------|-------------------|---|
| 11/23/2010 | 10:30 am | 10-12 | South boundary, south of proposed Pit 1 (ACD) |
| 3/16/2011 | 9:00 am | 15 | South boundary, south of original topsoil stockpile 3 (ACD) |
| 3/28/2011 | 10:12 am | 10 | Flew from the NE corner of Pit 1 toward Pond 3 (ACD) |
| 8/15/2011 | | ? | Observed east of the mine site (reported by resident DeLynn Sorensen). |
| 8/23/2011 | | 3 | Observed north of the Swapp Cabin (reported by resident Richard Dane) |
| 8/30/2011 | | 1 hen 3 chicks | South of Alton (reported by resident N. Sorensen) |
| 9/7/2011 | 7:35 am | 1 | North intersection near the county bypass road (ACD) |
| 9/12/2011 | | | Grouse seen on the road leading to the water well during early morning hours (reported by ACD mechanic) |
| 9/21/2011 | 8:30 am | 1 | Flew from the county road going west along the south end of the Alton town alfalfa fields (ACD) |
| 9/21/2011 | 11:30 am | 1 | Alton Cemetery (reported by Larry and Joe, ACD) |
| 9/23/2011 | | 11 | South of Pit 2 (ACD) |
| 9/26/2011 | | 11 | South of Pit 2 (ACD) |
| 10/3/2011 | 9:00 am | 14 | Two set of 7 that flew over pond 3 (ACD) |
| 10/21/2011 | 8:47 am | 11 | South of Pit 1 (ACD) |
| 10/27/2011 | 7:40 am | 40-50 | West of spoils pile (reported by Dave Juve, ACD) |
| 10/27/2011 | 9:30 am | 8-10 | West of spoils pile, 2 flying toward pond 3 (reported by Dave Spencer, ACD). |
| 10/27/2011 | 9:30 am | 12 | Flew from west of the spoils pile toward pond 3 (reported by Larry and Kirk, ACD) |
| 10/28/2011 | 9:30 am | 10-12 | Birds observed landing near LRC located below the diversion (reported by Dave Juve, ACD) |
| 11/15/2011 | | 4 | Observed on the haul road south of the Lower Robinson Creek crossing (ACD) |
| 11/29/2011 | 7:30 am | 5 | Flew over Pit 2 going to the West (ACD) |
| 12/6/2011 | 7:30 am | 20 | Where Natural LCR and Diversion of LRC merge, birds were observed flying to the South side of the spoils pile (ACD) |

Corridor Expansion and Revegetation

Approximately 95 acres of Utah (*Juniperus osteosperma*) and Rocky Mountain (*Juniperus scopolorum*) juniper and Gambell oak (*Quercus gambelii*) encroached habitat was treated and reclaimed within the corridor expansion area during 2011. This area has been shown to be an important pathway for greater sage-grouse migration. This work has been concentrated in this area, located immediately north of town, where woodland encroachment and habitat fragmentation have been extensive (Figure 2). When land treatments were initially being planned, the total area that was considered approximated 1700 acres. Using Geographic Information Systems, this value was generated by digitizing a perimeter around this fragmented portion of the corridor and plans were then made to selectively treat those areas that would provide the connectivity effectively and efficiently. Steep slopes and rugged terrain that are not predicted to support sage-grouse migration were not included in the treated areas.

During the spring to fall months, Heaton Brothers cooperation, with financial support and habitat improvement consultation from ACD, have continued to remove oak and juniper trees by pushing trees over or digging them up using a Heaton Brother owned tractor and loader (Figure 1). Trees were then placed in debris piles. The seedbed in tree removed sites was prepared by disking first and then burying seed using a rangeland drill (owned by ACD). Many of the forb species included in the seed mix were selected because of their preference by greater sage-grouse hens and chicks. The seeded species will also serve as forage for grazing animals and cover for a diversity of wildlife, including sage-grouse adults and chicks. No birds have been observed in the corridor but appear to use this area based on observations of birds at both the north and south ends. The corridor work that was completed in 2011 has focused on its expansion to the east and habitat enhancement within the previously treated area (Figure 2).



Figure 1. Tractor pulled disk used to create resource patches consisting of seeded forbs, grasses, and juvenile or low density sagebrush.

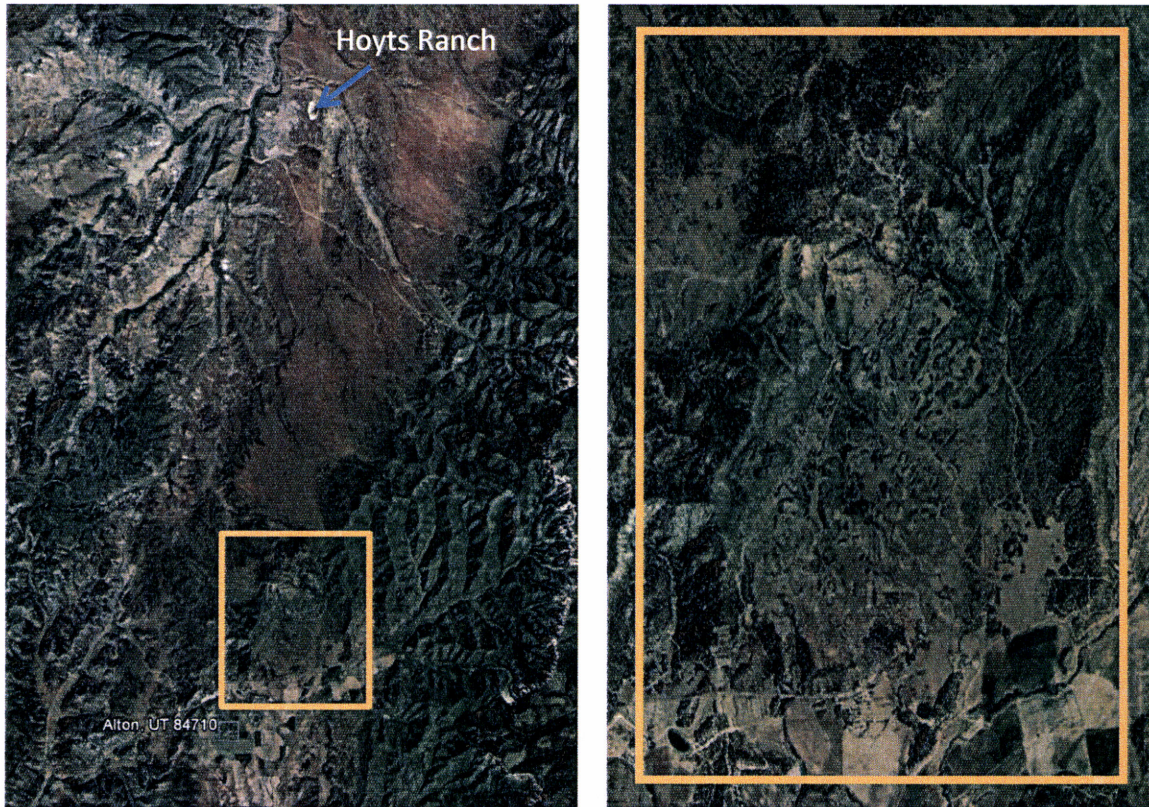


Figure 2. The yellow box highlights the primary corridor treatment area. This region has had high historic woodland establishment in comparison to the more open sagebrush communities to the north (left). Corridor improvement has concentrated on tree removal and revegetation efforts for creating conditions more suitable for sage-grouse movement, cover, and habitat use.

Removal of Predators that take adult and juvenile sage-grouse

Predator control efforts continued throughout 2011, with an emphasis on reducing coyote, crow, and raven densities. These species have been shown to have significant impacts on sage-grouse populations (Baxter et al. 2007; Connelly et al. 2003). According to Kevin Dustin, a predator control specialist from the USDA Wildlife Services department, approximately 1,100 poison eggs were distributed throughout the Alton and Sink Valley area, primarily near major roadways. Dustin explained that an estimated four eggs are needed for each single raven mortality. From this calculation, they suggest that 275 ravens were exterminated from the Alton area within the year. This control effort has reduced the number of crows and ravens throughout the region, but has likely seen highest reduction levels near town where raven densities are highest because of the more consistent food source (feed lots).

Federal trappers with Wildlife Services placed mammal traps around the Alton area. Several mammals that live in the Alton area have potential to drastically reduce sage-grouse survival,

including both adults and juvenile birds (Connelly et al. 2003; Mezquida et al. 2006). Wildlife Services focused their efforts primarily on coyote removal. In 2011, a total of 18 coyotes were trapped and killed from the Alton area.

The long-term implications of continued predator control include higher chances of survival of adult and juvenile birds (Cote and Sutherland 1997) and the greater potential for greater re-establishment in revegetated habitats following mining activities.

Enhancement and diversification of intact sagebrush ecosystems

Northeast of the Alton lek is an intact sagebrush community that is located outside the direct impact zone of mining activities. This area is dominated by a big sagebrush - black sagebrush complex, potentially serving as nesting and brood-rearing habitat for sage-grouse. The structure of the sagebrush community within this area is predominantly decadent and low in species richness, in particular forbs and grasses. From visual inspection and based on samples collected to determine vegetation cover (using the boot-tip method), total sagebrush cover is higher than levels recommended in the habitat guidelines (15-25% canopy cover) (Connelly et al. 2000; Gregg et al. 1991). Land management treatments that increase plant communities heterogeneity while reducing ecological fragmentation have been shown to benefit lekking bird species generally (Boyd et al. 2011; Fuhlendorf et al. 2006).

In fall 2010, sagebrush was removed or thinned in small patches using a tractor-pulled disk operated by Carl Heaton (Figure 2). This method was also effective in creating an improved seedbed for greater plant establishment following seeding. Seeding after treatment was intended to increase plant community establishment and favor desirable forbs, emphasizing those important for sage-grouse diets. Similar treatments were applied in the Parker Mountains that resulting in greater forb densities and higher food availability for chicks and adult birds (Dahlgren et al. 2006). Additionally, these seeded species could also create habitat for a variety of insect populations which may be used to support sage-grouse chick diets.

Habitat diversification treatments were intended to create small-scale patches that result in localized early seral plant community structure and landscape-scale ecological heterogeneity. Furthermore, these treatments were designed to prevent excessively large patches that could potentially act as landscape fragmentation rather than stand enhancement. Following treatment, the total acreage of the conservation area was approximately 72 acres. The area of the treatment patches combined is approximately 2.5 acres (Figure 3).

The seed mix applied to all treated sites consisted of both native and introduced species (Table 2). All grasses included are native species that occur in the neighboring plant communities. Most of the forbs are also natives, except for 7 species that were included because of their known use by greater sage-grouse. Grass species important for sage-grouse were

recommended from sage-grouse specialists (Mike Gregg, Erica Ersch) and Granite Seed (Lehi, Utah) where the seed was purchased.

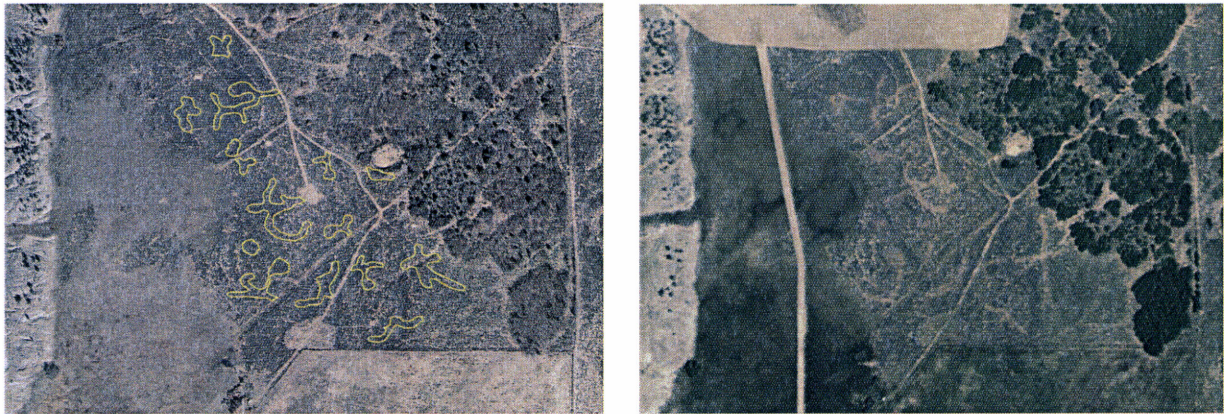


Figure 3. Proposed (left photo) and implemented (right photo) treatment patches for the conservation area. The purpose is to enhance sage-grouse habitat for potential nesting and brood rearing habitat. Patches function as sites for forb establishment and habitat diversification. Within each patch, soils were disked to reduce or eliminate big sagebrush competition enhancing forb and juvenile sagebrush establishment potential.

One year following seeding, plant community density and cover of seeded plants was measured in Sept. 2011. Plant cover was determined using the point line-intercept method. Data samples were recorded for all plant species contacted by a dropped pin along a 15m transect line. Other surface features were also recorded including bare ground, large litter, fine litter, and dead shrub. Plant density was determined using 1-m square quadrats placed along randomly positioned transect lines.

Average shrub cover in untreated (control) plots was $52 \pm 3\%$ compared to $7.4 \pm 1.0\%$ in treated plots (Figure 4). Shrub density was 1.1 ± 0.1 plants/ m^2 in treated plots and 2.0 plants/ m^2 in control plots (Figure 5). In contrast, perennial forb cover in treated plots was $10.2 \pm 2.0\%$ compared to $0.5 \pm 0.3\%$ in control plots. Forb density was 7.0 ± 0.8 plants/ m^2 in treated plots compared to 1.0 ± 0.3 plants/ m^2 in control plots. Treated plots had 27 forb species and 10 grass species that were observed in more than one plot whereas control plots had 11 forb and 4 grass species. *Trifolium repens*, an important sage-grouse forb species, had 1.1 ± 0.3 plants/ m^2 in treated plots compared to none in control plots. Similarly, *Achillea millefolium* had 0.9 ± 0.4 plants/ m^2 in treated plots compared to 0.2 ± 0.1 plants/ m^2 in control plots. Average percent bare ground was higher in treated plots, however, litter cover was more similar between treated and control plots (Figure 6). Over time, treated plots will increase plant cover and protect soils from erosion and raindrop impact.

Table 3. List of plant species included in the seed mix applied to treated patches in the conservation area. Sites were seeded in fall 2010.

| Scientific Name | Common Name | Form | Origin |
|-------------------------------|--------------------------|-------------|-------------------|
| <i>Bromus carinatus</i> | mountain brome | Grass | Native |
| <i>Elymus elymoides</i> | bottlebrush squirreltail | Grass | Native |
| <i>Elymus trachycaulus</i> | slender wheatgrass | Grass | Native |
| <i>Stipa hymendoides</i> | Indian ricegrass | Grass | Native |
| <i>Achillea millefolium</i> | western yarrow | Forb | Native |
| <i>Astragalus cicer</i> | <i>Cicer milkvetch</i> | <i>Forb</i> | <i>Introduced</i> |
| <i>Balsamorhiza sagittata</i> | arrowleaf balsam root | Forb | Native |
| <i>Cleome serrulata</i> | Rocky Mountain beeplant | Forb | Native |
| <i>Lactuca serriola</i> | prickly lettuce | Forb | Introduced |
| <i>Linus lewisii</i> | blue flax | Forb | Native |
| <i>Lupinus argenteus</i> | silvery lupine | Forb | Native |
| <i>Medicago sativa</i> | alfalfa | Forb | Introduced |
| <i>Melilotus officinalis</i> | yellow sweet clover | Forb | Introduced |
| <i>Onobrychis viciifolia</i> | sainfoin | Forb | Introduced |
| <i>Penstemon palmerii</i> | Palmer penstemon | Forb | Native |
| <i>Sanguisorba minor</i> | small burnett | Forb | Introduced |
| <i>Sphaeralcea coccinea</i> | scarlet globemallow | Forb | Native |
| <i>Trifolium repens</i> | white Dutch clover | Forb | Introduced |

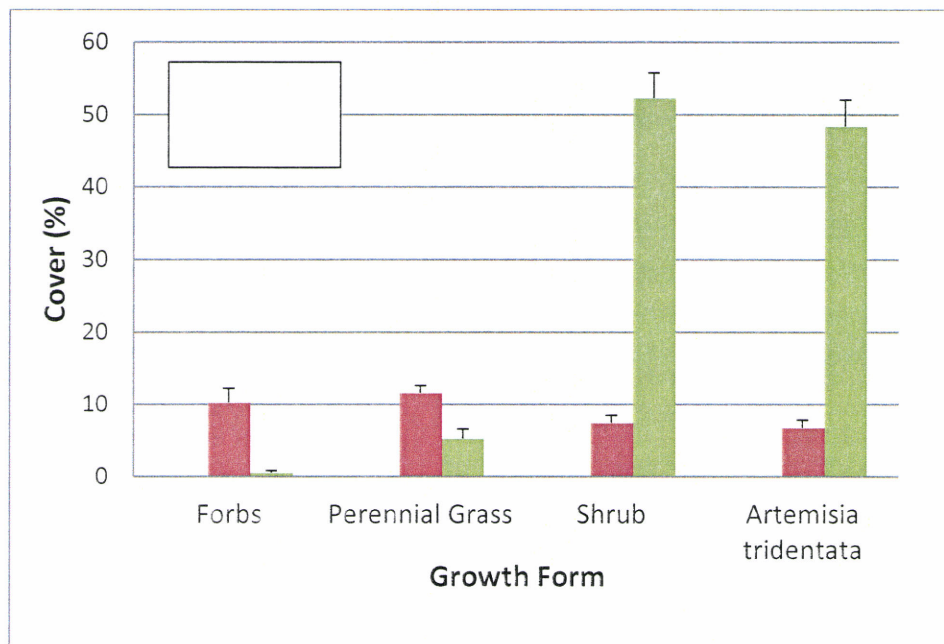


Figure 4. Percent cover of forbs, grasses, and shrubs in treated sites compared to untreated (control) sites. Bars represent average canopy cover with error bars representing standard error values.

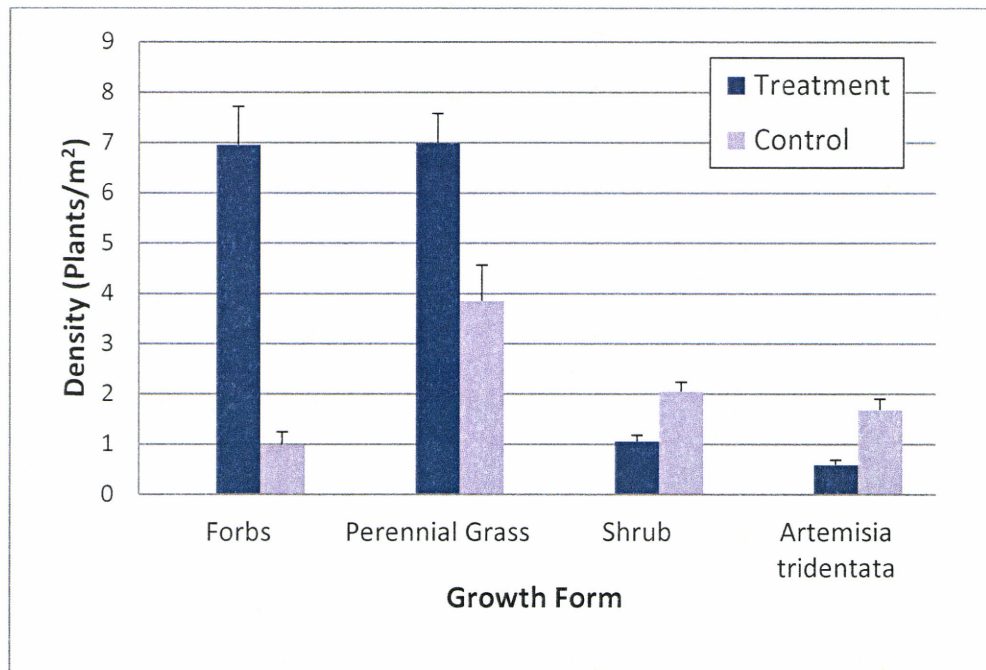


Figure 5. Plant density in relation to habitat treatment in comparison to untreated sites. Treatments were implemented in fall 2010. Bars represent average density and standard error values.

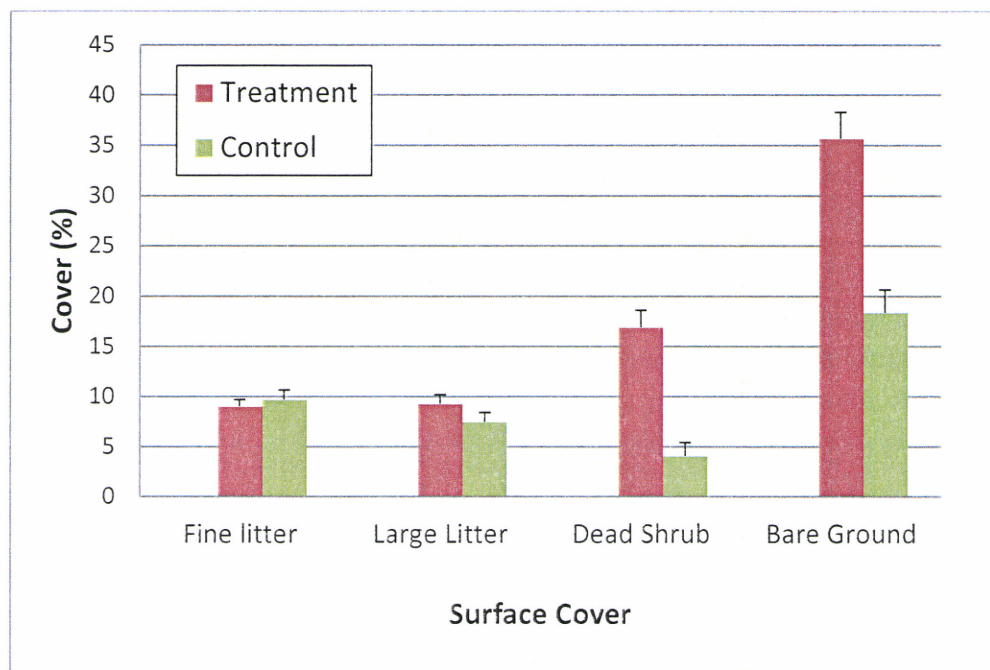


Figure 6. Cover of other surface characteristics including litter (organic debris primarily from dead plant material and percent bare ground).

Long-term implications of habitat diversification in sagebrush habitats include greater foraging availability for rearing brood and for supporting adult foraging opportunities. Within the Alton area, natural successional pathways will eventually provide a recruitment and reestablishment of sagebrush seedlings, juvenile sagebrush plants and eventually a multi age-class of sagebrush adults that meet breeding guidelines established by Connelly and supported by Bureau of Land Management (Connelly et al. 2000).

Sage-grouse Monitoring

Plans were made to trap and monitor sage-grouse at Hoyt Ranch in spring 2011 while birds were attending the Hoyts Ranch lek. Funding (\$18,000) was provided by Alton Coal to support all aspects of the trapping and monitoring effort. A detailed proposal describing trapping and monitoring plans was submitted to the Division of Wildlife Resources (DWR) for consideration and approval to trap and collar sage-grouse (Appendix A). Based on low sage-grouse numbers attending the Hoyts Ranch lek and potentially other unknown factors, the DWR determined that trapping and collaring birds would not benefit the population and decided not to provide a certificate of authorization (COR) permitting the trapping effort. Modifications to the proposal were made and submitted, including a consideration of fall trapping near the town of Alton. Similarly, a COR was not provided to conduct fall trapping. Because permitting could not be obtained through the appropriate government agency, trapping was postponed until 2012 at which time a proposal will be submitted to the Division of Wildlife Resources for acquiring a permit to trap and collar greater sage-grouse.

Employees of the Coal Hollow mine operation were instructed to report all sightings of sage-grouse. A log of each sighting was maintained during the year (Table 3). Several birds have been observed near or on the edge of excavated pits on multiple occasions (Figure 7).

CCARM Participation

Managers and sage-grouse consultants for ACD attend CCARM meetings frequently to provide discuss sage-grouse conservation and workplans for improving habitat conditions. CCARM members and invited participants have visited the mine site where they received a tour of the mining activities and presenting with reclamation objectives. In cooperation CCARM and the multiple organizations this group represents, several signs were produced and placed at strategic locations throughout sage-grouse occupied sites in southern Utah. One sign was placed near the mining site (Figure 8). These signs describe sage-grouse conservation efforts and helping with public awareness of efforts being made by cooperating groups.



Figure 7. Greater sage-grouse standing at the mine site at the Coal Hollow Mine. Birds were often observed near disturbed sites during mining activities in 2011.



Figure 8. Signs posted in sage-grouse occupied sites including along the roadway near the mine site. These signs describe cooperative efforts being made to improve habitat and maintain sage-grouse populations in southern Utah.

PROPOSED ACTIVITIES FOR 2012

Winter Predator Control Project

Predators will continue to be controlled throughout the winter period. Ravens and crows will be poisoned using treated eggs and small mammals will be trapped or shot. Aggressive predator control methods are needed to sustain the sage-grouse population by reducing morality to chicks, juveniles, and adult birds. Even though golden eagles have been observed taking adult sage-grouse and can impact populations densities, these protected birds will not be controlled.

Sage-grouse monitoring

Trapping, collaring and monitoring activities will be discussed and determined based on consultation and recommendations from the Utah Division of Wildlife Resources in the Cedar City office. Monitoring activities can be evaluated and revised to meet current needs and assessment by the UDWR. ACD will continue to record bird observations near the mine and surrounding landscape throughout the year. Historically, the number of birds attending the lek has varied and this pattern may be an important consideration when determining trapping plans now and in the near future (Figure 9).

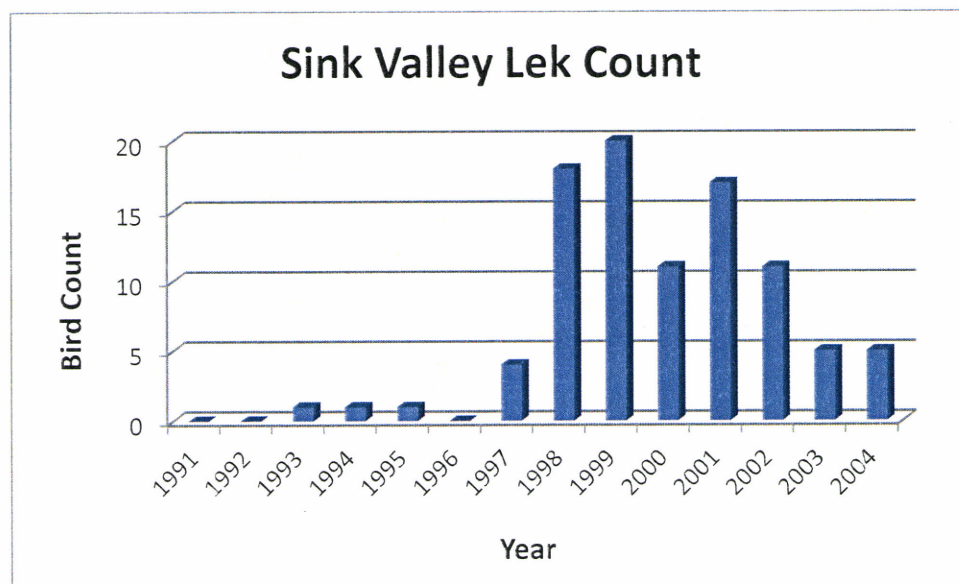


Figure 9. Historic lek count data for the Sink Valley lek, located south of Alton, Utah. These data represent the number of males strutting on the lek during the spring of each year between 1991 and 2004. No birds have been seen on the lek from 2010-2011. Fourteen birds were recorded on the lek in 2007.

REFERENCES

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